



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,688	07/14/2003	Tetsushi Inoue	240406US0 CONT	4124

22850 7590 03/15/2005

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER
----------

YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
----------	--------------

1774

DATE MAILED: 03/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/617,688

Applicant(s)

INOUE ET AL.

Examiner

Marie R. Yamnitzky

Art Unit

1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 July 2003 and 14 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-23 is/are rejected.
- 7) ☒ Claim(s) 24-27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ ~~Certified copies of the priority documents have been received in Application No. 09/125,791, which is a~~
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date rec'd 14 July 2003 and 14 Oct 2003.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

1. The preliminary amendment filed July 14, 2003, which amends the specification, replaces the abstract, cancels claims 1-11 and adds claims 12-27, has been entered.

Claims 12-27 are pending.

2. Claims 12-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The application as originally filed does not provide sufficient support for the full scope of compounds represented by formula (I) as defined in present claim 12, with claims 13-21 dependent therefrom.

The application as originally filed does not provide the definition of  $R_{02}$  and  $R_{04}$  as set forth in present claim 12. Pages 5 and 9, the original abstract, the replacement abstract, and the original claims define  $R_{02}$  and  $R_{04}$  as being any one of three aryl-substituted amino groups of specified formulae.

The specification as originally filed set forth over 400 specific examples of compounds said to be within the scope of formula (I) as defined in the original disclosure. Of those numerous examples, the six specific compounds represented by compound numbers 295-300 as defined in Table 55 of the specification do not meet the limitations of formula (I) as defined elsewhere in the original disclosure, but do meet the limitations of a compound of formula (I) as

defined in present claim 12. While these six specific compounds were disclosed in the application as originally filed and thus provide support for present claims 22-27, which are limited to these six specific compounds, these six specific compounds do not provide sufficient support for the subgenus of compounds represented by formula (I) as defined in claim 12.

The subgenus defined in claim 12 defines hundreds, if not thousands, of compounds. Examples of compounds within the scope of claim 12 which are not disclosed in the application as originally filed are compounds in which  $R_{02}$  and/or  $R_{04}$  represents an alkyl group. None of compound numbers 295-300 are compounds in which  $R_{02}$  and/or  $R_{04}$  represents an alkyl group. Regarding the terminology of "aryl, alkoxy, aryloxy group, or define a fused aromatic ring", the only example provided for an aryl group represented by  $R_{02}$  and/or  $R_{04}$  is a phenyl group, the only example provided for an alkoxy group represented by  $R_{02}$  and/or  $R_{04}$  is a methoxy group, the only example provided for an aryloxy group represented by  $R_{02}$  and/or  $R_{04}$  is a phenoxy group, and the only example provided for  $R_{02}$  and  $R_{04}$  as defining a fused aromatic ring is a naphthyl group formed by fusing a benzene ring to each of the phenyl groups to which  $R_{02}$  and  $R_{04}$  are attached. These specific groups are insufficient to support the broader terminology in claim 12. In addition, no examples are provided of compounds of formula (I) wherein  $R_{02}$  and  $R_{04}$  are as defined in claim 12 and  $r_2$  and  $r_4$  are each an integer of 3-5, or wherein  $L_0$  is a substituted or unsubstituted o- or m-phenylene group having two rings.

3. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitations of claim 19 are unclear as dependent from claim 15. Per claim 15, the organic compound layer comprising a compound of formula (I) must be a layer having a function of injecting holes, and there must also be an organic compound layer having a function of transporting holes. It is not clear if the light emitting layer required by claim 19 is the layer having a function of transporting holes as required by claim 15.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 12-21 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 0 666 298 A2.

Prior art compound numbers VII-10 and X-33 (see pages 54, 55, 74 and 79) meet the limitations of a compound of formula (I) as defined in present claim 12 and further defined in present claim 13.

The prior art discloses these compounds for use in an organic EL device having layer structures such as required by the present claims. For example, see page 92 and Fig. 1.

With respect to present claim 21, it is the examiner's position that a device having a hole injecting and transporting layer made of VII-10 or X-33 will inherently meet the recited hole mobility limitation since the prior art compounds have two diarylamino substituents joined via a p-biphenylene group, with each of the diarylamino substituents being further substituted with a diarylamino group. Present compound 2, which has a similar structure, provides a layer having a hole mobility of  $2.7 \times 10^{-3} \text{ cm}^2/\text{Vs}$  (see Example 9 on pages 129 and 130 of the present specification).

6. Claims 12-21 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 1 029 909 A1.

EP '909 is considered by the examiner to be available as prior art under 35 U.S.C. 102(b) against the present claims which are not supported by the original disclosure. The effective U.S. filing date for the claimed subject matter which is not supported by the original disclosure is July 14, 2003.

EP '909 discloses specific compounds within the scope of formula (I) as defined in present claim 12 and further defined in present claim 13. See compounds PD-06, PD-09 through PD-39 and PD-52 of the formulae shown on pages 10-41 and 25.

The prior art discloses these compounds for use in an organic EL device having layer structures such as required by the present claims. For example, see paragraphs [0045], [0053] and [0082]-[0089] on pages 38, 39 and 45-46.

With respect to present claim 21, it is the examiner's position that a device having a hole injecting and transporting layer made of one of the compounds identified above will inherently meet the recited hole mobility limitation since the prior art compounds have two diarylamino substituents joined via a p-biphenylene group, with each of the diarylamino substituents being further substituted with a diarylamino group. Present compound 2, which has a similar structure, provides a layer having a hole mobility of  $2.7 \times 10^{-3} \text{ cm}^2/\text{Vs}$  (see Example 9 on pages 129 and 130 of the present specification).

(Compound PD-08 of the formula shown on page 10 of EP '909 is compound no. 297 as described in Table 55 of the specification. Compound PD-08 is not prior art since present compound no. 297 is supported by the original disclosure.)

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 666 298 A2 as applied to claims 12-21 above, and for the further reasons set forth below.

The prior art does not explicitly disclose present compound numbers 295 and 296, but these compounds are within the scope of the prior art and are similar in chemical structure to prior art compound numbers VII-10 and X-33.

Prior art compound number X-33 is the same as present compound numbers 295 and 296 except that compound numbers 295 and 296 have a methyl substituent on one of the phenyl groups for each of the two diarylamino groups represented by  $R_{01}$  and  $R_{03}$ , and compound number 296 has the phenyl group represented by each of  $R_{02}$  and  $R_{04}$  at a 3 position whereas the prior art compound has each of the corresponding phenyl groups at a 4 position.

Prior art compound number VII-10 is similar to present compounds numbers 295 and 296. Compound numbers 295 and 296 have a methyl substituent on one of the phenyl groups for each of the two diarylamino groups represented by  $R_{01}$  and  $R_{03}$ , whereas prior art compound VII-10 does not. The prior art compound is also a position isomer of present compounds 295 and 296, the prior art compound having the diarylamino groups corresponding to  $R_{01}$  and  $R_{03}$  at a 3 position and having the phenyl groups corresponding to  $R_{02}$  and  $R_{04}$  at a 3 position.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to provide compounds similar in structure to the specific compounds disclosed by the prior art with the expectation that compounds that are similar in structure would have similar properties and could be used for the same purpose. One of ordinary skill in the art at the time of the invention would have reasonably expected that compounds having a methyl group substituted on one of the phenyl groups of the diarylamino substituents in prior art compound VII-10 and X-33 would have properties similar to prior compounds VII-10 and X-33 since various other specific compounds disclosed by the prior suggest phenyl and methylphenyl groups to be interchangeable. For example, see VII-1, VII-27, VII-28, VII-30, VII-33, X-2, X-7 and X-8. Further, one of ordinary skill in the art would have reasonably expected that position isomers



Art Unit: 1774

would have similar properties and could be used for the prior art purposes because the specific examples disclosed in the prior art include numerous examples of compounds which are position isomers of each other. For example, prior art compounds VII-10 and X-33 are position isomers of each other.

9. Claims 22-27 are objected to because of the following informalities:

With respect to references to compound numbers as described in Table 55 of the specification, applicant's attention is respectfully directed to MPEP 2173.05(s). In the present case, it is the examiner's position that the incorporation by reference in claims 22-27 is done for applicant's convenience and is not a necessity.

Appropriate correction is required.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6,541,129 B1 to Kawamura et al. is in the same patent family as EP 1 029 909 A1, which is applied above. The examiner notes that claim 7 of the '129 patent requires a compound similar to compound numbers 297 and 298 as required by present claims 24 and 25, respectively.

11. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

Art Unit: 1774

The current fax number for Art Unit 1774 is (703) 872-9306 for all official faxes.  
(Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY  
March 07, 2005



**MARIE YAMNITZKY**  
**PRIMARY EXAMINER**

1774